

Minimum One Year Outcomes for Open Surgical Treatment of Extra-articular Femoroacetabular Impingement

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Introduction

- Extra-articular impingement results from **abnormal contact between the extra-articular regions of the proximal femur** (greater trochanter, lesser trochanter, extracapsular femoral neck) and the **ilium or ischium**.
- This may result in pain due to **direct compression** of soft tissue structures or **indirect damage** to labral and articular cartilage.
- Clinical outcomes for treatment of extra-articular impingement are limited.
- Existing studies focus primarily on patients with sequelae of pediatric hip disease (Legg-Calve-Perthes, Slipped Capital Epiphysis).

Aims

1. To describe **pre- and post-operative functional outcome scores** in patients undergoing open hip preservation surgery for extra-articular impingement.
2. To identify any **associated factors for reoperation or failure to improve** postoperatively within this cohort.

Methods

- **Retrospective review of prospective data over a 44 month period. (3/10-11/13)**
- **Presumptive diagnosis of extra-articular impingement:**
 - Lateral or posterior pain on history
 - Poor external rotation
 - Poor internal rotation without significant cam lesion
 - Positive posterior impingement sign
 - Poor pain relief to intra-articular injection
 - Presented at consensus indications conference to determine optimal approach
- **The diagnosis was confirmed intra-operatively by contact between the extra-articular femur (greater trochanter, extra-capsular femoral neck) on ischium or ilium within a physiologic range of motion.**
- **Exclusion criteria:**
 - Less than 1 year of patient reported outcomes follow up from FINAL surgery (including bilateral surgery).
 - Extra-articular impingement treated with arthroscopic approach alone.

Methods

- **Demographic variables:**

- Age, sex, laterality, previous hip surgery

- **Clinical parameters:**

- Range of motion, provocative testing

- **Radiographic parameters:**

- CT: acetabular version, femoral version, neck-shaft angle, alpha angle
- MRI: labral integrity
- Xray: tonnis grade and lateral center edge angle

- **Functional outcome scores**

- Modified Harris Hip Score (HHS), Hip Outcome Score (HOS), International Hip Outcome Tool (iHOT-33)

Methods

• Primary Outcomes

1. Failure to improve from baseline at minimum 1 year

– Defined as:

< 10 point improvement in iHOT-33 from baseline

- iHOT-33 displays less ceiling effect in younger, active populations undergoing hip arthroscopy for FAI [2].

– OR

2. Reoperation other than elective hardware removal

Results: Demographics

- 51 patients (62 hips)
- Males: 8 (16%) Females: 43 (84%)
- Mean age: 25 years (range 15-43)
- Unilateral: 40 (78%) Bilateral: 11 (22%)
- Previous Hip Surgery: 21 (41%)
- Previous Hip Disease
 - Legg-Calve-Perthes (5 patients)
 - Ehlers Danlos (1 patient)
 - DDH (1 patient)
 - SCFE (1 patient)

Results: Intraoperative Procedures

• Trochanteric Procedures Performed

- Anterior trochanteric osteoplasty (22 cases)
- Posterior trochanteric osteoplasty (9 cases)
- Combined anterior/posterior trochanteric osteoplasty (13 cases)
- Relative neck lengthening (12 cases)

• Intra-Articular Procedures Performed

- Osteochondroplasty (47 cases)
- Rim resection (16 cases)
- Labral repair (19 cases)
- Labral Reconstruction (2 cases)

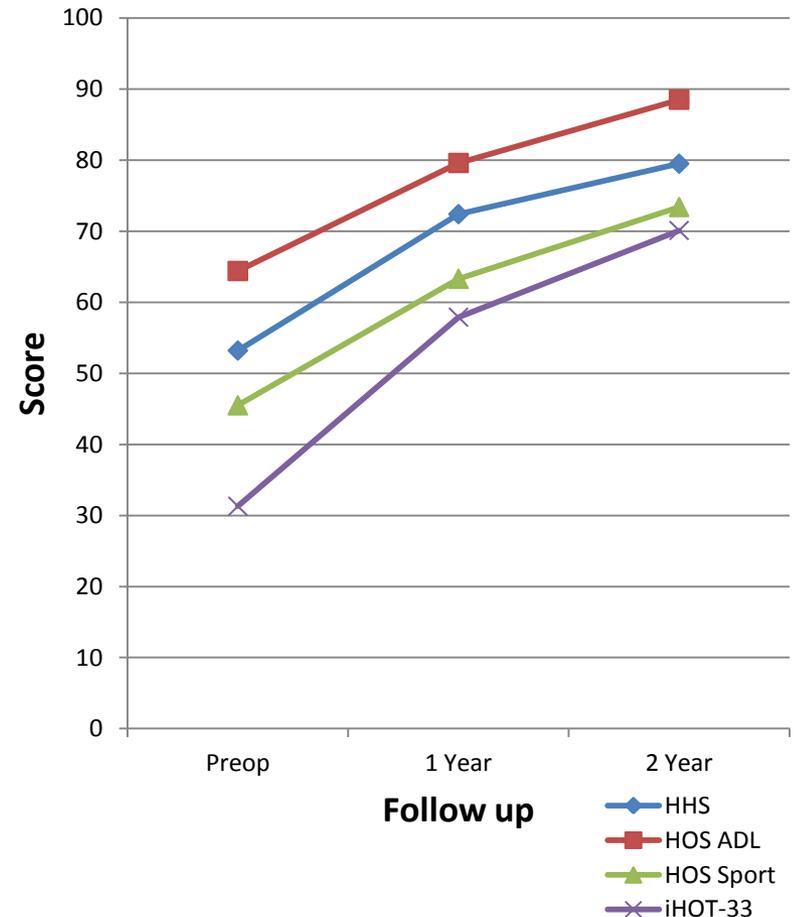
Results: PROMs

Overall Patient Reported Outcomes

Outcome Scores	Preoperative Score	Postoperative Score at Last Follow Up	% Improved by MIC
mHHS	53 (14)	75 (17)	79%
HOS ADL	64 (20)	83 (18)	75%
HOSSport	46 (27)	66 (28)	60%
iHOT-33	31 (17)	62 (26)	76%

Mean follow up 23 months (range 11-54)

Continued improvement out to 2 years (N = 16 at 2 years from final surgery)



Results: Reoperations/Failures

- **Reoperations (N=7 hips)**
 - Arthroscopy (4)
 - Lysis of adhesions with/without ROH
 - PAO (2)
 - Residual dysplasia, Instability (Ehlers Danlos)
 - Open gluteus medius repair (1)
 - Gluteus medius tear, HO removal, sciatic nerve neurolysis
- **Failure to improve at last follow up on iHOT (N=8 patients)**

Results: Associated Factors

- **HOS Sport: Higher preoperatively in Failures (58 [SD 19] versus Improved (40 [SD 27]) (p=0.03).**

- **No other associated factors:**

- Age
- Sex
- Unilateral v Bilateral
- Previous Hip Surgery
- Lateral CEA
- Acetabular Version
- Femoral Version
- Alpha Angle
- Neck-Shaft Angle
- Tonnis grade
- Labral Integrity
- Preoperative ROM
- Preoperative PROMs
- Pattern of EXT impingement

Discussion

- **Patients undergoing open hip preservation surgery for extra-articular impingement have improvements in PROMs at min. 1 year follow up (approx 75% of cases).**
- **Continued improvements seen at 2 years follow up in subset of patients reaching this timepoint since last hip surgery.**
- **No factors examined in this study were associated with poor outcomes (preoperative HOS Sport ?clinical significance).**

References

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